Microflu Microfluidics Technology (Changzhou) Co., Ltd.

Continuous Flow Systems

MF-V4 Lab-scale & Gram-scale Glass Flow Reactors

Microreactor has the advantages of large specific surface area, high mass and heat transfer efficiency, high safety, and small amplification effect. Compared with the traditional batch reaction, it has higher reproducibility and stability in the process of reaction amplification and optimization. Sexuality and efficiency. In addition, the micro-reactor has a low heat buffer demand, a small footprint, and a high degree of automation, which greatly saves manpower and material resources.

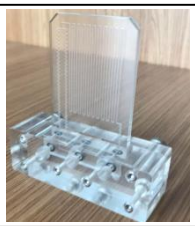
MF-V4 series glass microchannel reactors have the characteristics of low reagent consumption (liquid holding capacity of microliters), large specific surface area, high temperature resistance (-25℃~195℃), high pressure resistance (2Mpa), etc. The product takes into account the two major factors of mass transfer and pressure drop. There is no sudden shrinkage and sudden expansion in the process flow channel, which ensures efficient mass transfer and small pressure drop. The heat exchange module can maximize the mass transfer and heat transfer efficiency. Safely and stably realize the chemical process of research and development and small-scale trials.

MF-V4 is a glass Flow Reactor for lab-based reaction screening & process optimisation. It's modular set-up gives the User flexibility on the configuration & number of components. With independent heat exchange, V4 has optimal thermal control for challenging chemistries & process intensifica.With glass Flow Reactors at the heart of the system & peripherals with a high chemical compatibility, the lab-scale system is suitable for a wide range of challenging chemistries & processing conditions.

MF-V4 glass flow reactors specifications

Flow rate: 0.1-10ml/min (up to 0.6kg/h)
Flexible reactor volumes: 0.063 to 0.51ml
Wetted materials: Glass,PFA, PFA & FFKM Or 316L
Dimensions: 68×95×4mm

Specifications of MF-V4 glass flow reactor

MF-V4 Series Lab-scale Glass Flow Reactors				
Figure				
Model	MF-V4-M	MF-V4-M（SS）	MF-V4-M(SV)	MF-V4-M(SX)
Size	68×95×4mm	50×80×4mm	50×80×4mm	50×80×4mm
Material	Borosilicate Glass			
Channel Size	Depth×Width=0.5×0.55mm	Depth×Width=0.25×0.5mm	Depth×Width=0.12×0.54mm	Depth×Width=0.12×0.54mm
Channel Length	2.6m	1.28m	1.43m	1.32m
Volume	0.51mL	0.125mL	0.072mL	0.063mL
Surface to volume ratio(u)	8000	13096	23921	24380
Design temperature (°C)	-25℃-195℃（Custom：-60℃~300℃）			
Design pressure (bar)	0-20bar			
Flow rate	0.1-10mL/min			
Features/Advantages	Micro channel with modular system to connect multiple reactors in series or parallel； The liquid holding capacity is small, reducing the consumption of expensive reagents and reducing the cost of process research and development； Good mass transfer, heat transfer, efficient mixing and excellent operational safety;			

Use	The general-purpose microreactor is suitable for most reaction processes. The unique design enhances the mixing effect and speeds up the reaction rate. This structure is the same as our company's MF-V6 structure, and there is almost no amplification effect after the reaction transfer.	General-purpose micro-reactor, suitable for most reaction processes.	The process-enhanced micro-reactor has a good effect on the reaction where the two-phase density difference is large, the reaction rate constant is very low, and the fluid viscosity is small.	The process-enhanced micro-reactor has a good effect on the reaction with a large difference in two-phase density and a very low reaction rate constant.
Other Description	The product is a modular component, with a small pressure drop, which can be used in a flexible combination of series/parallel according to the process conditions. With fixtures and heat exchange temperature control system, the mass transfer and heat transfer efficiency can be maximized, and the chemical process of research and development and small-scale testing can be realized safely and stably.			
Features	The product takes into account the two major factors of mass transfer and pressure drop, and there is no sudden shrinkage and sudden expansion in the process flow channel, ensuring efficient mass transfer and small pressure drop.			
Holder	Fixtures are used to fix the glass microchannel reactor so that it can withstand high pressure and at the same time resist the corrosion of almost all chemical reagents except molten alkali metals and certain fluorides. It can make the microreactor operate stably for a long time under the condition of strong corrosive reagents. Fixture material: PFA (optional PEEK, PMMA, PC, PASF and other transparent materials)			
Injection Equipment	Syringe pump Etc			

MF-V4 glass flow reactors technical characteristics

· Low liquid holding capacity (microliter) consumes less reagents, has high economic efficiency for the synthesis of expensive reagents, and reduces the cost of process development.

· The large specific surface area and the heat exchange system can accurately control the temperature to promote the production of the target product.

· At the same time, mass transfer and pressure drop are taken into account. There is no sudden shrinkage and sudden expansion in the process flow channel, which ensures efficient mass transfer and small pressure drop.

· With the heat exchange module, the mass transfer and heat transfer efficiency can be maximized, and it is safe and stable.

· It is used in the chemical process of teaching training, process research and development, and small test.

· This set of equipment can connect 2-8 sets of independent chip formation systems in series, and adjust the residence time of samples according to experimental requirements to improve the yield.

· It is suitable for various chemical reactions and mixing processes, especially for the formation of nanoparticles. It has certain solid compatibility and can produce nanoparticles continuously and stably.

· Compatible with all reagents except hot concentrated alkali, molten alkali metal, hot concentrated H3PO4, HF, and strong corrosive agent, it can run stably for a long time.

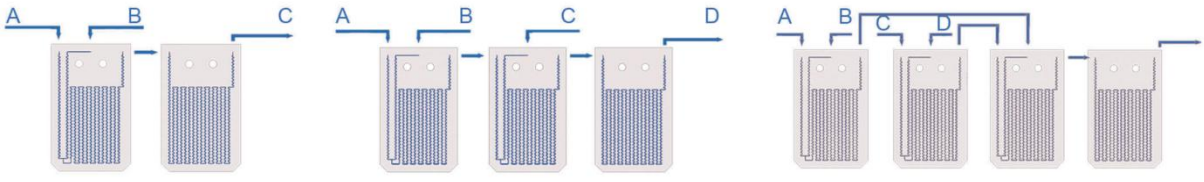
Reaction type(Technological Process)

The free combination modular system configuration can connect multiple reactors in series or in parallel to realize one-step and multi-step synthesis reactions. The highly flexible modular design ensures that it can adapt to the requirements of various processes.

Series: used to delay the residence time and ensure the reaction conversion rate meets the technical requirements.

Parallel connection: used to increase production capacity to ensure that the production demand is guaranteed while the conversion rate is reached.

A+B=C (one-step series connection) A+B=C+Q=D (multi-step series connection) A+B=Q1 C+D=Q2 Q1+Q2=D (multi-step series connection + series connection).



MF-V4 glass flow reactors applications

· Assessment of process feasibility under flow conditions
· Exploration of novel reaction space
· Process parameter optimisation & validation

· Rapid kinetic profiling
· Evaluation of parameter influence on CQA's
· Process feasibility assessment
· Reaction screening & process optimisation
· Material supply for performance testing
· Education & training